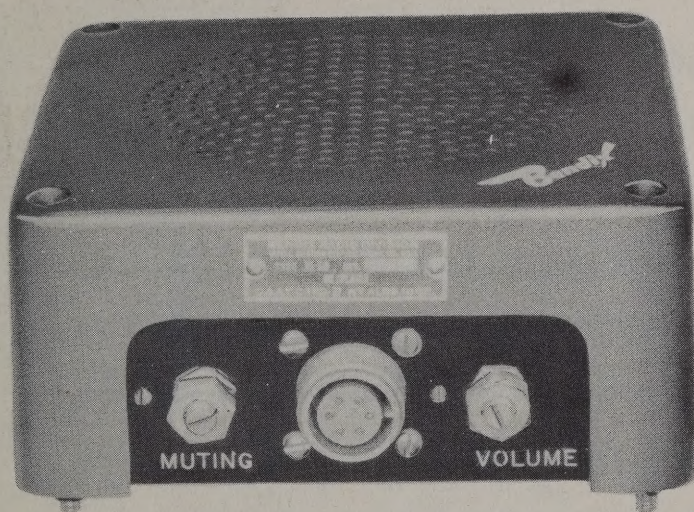


Type MI-51B Amspeaker

Technical Data



BENDIX RADIO

DIVISION OF BENDIX AVIATION CORPORATION
BALTIMORE 4, MARYLAND

MI-51B TRANSISTORIZED AMSPEAKER

GENERAL

The Bendix MI-51B Amspeaker is a compact combination push-pull transistorized audio amplifier and loudspeaker, designed to replace or supplement headphones in aircraft cockpits. The unit may also be used in the cabin for passenger address and entertainment purposes. This unit is interchangeable with the earlier Bendix MI-51A Amspeaker.

DESCRIPTION

An attractive unbreakable Cycolac* plastic case houses the entire unit. It measures 6.11 inches by 5.71 inches by 3.0 inches, and weighs 2 pounds, 1 ounce. The unit secures to a mounting plate by four captivated screws. All external wiring to the unit is made through a 6-pin connector, AN-3102-14S-6S, located on one side of the unit. A VOLUME control and a MUTING control are conveniently located adjacent to the unit connector. The unit includes a relay which can be connected to the transmitter control system to provide the MI-51B with the desired muting during transmitter operation.

The MI-51B provides a full four watts of audio output, flat within 3 db from 200 to 7000 cycles. An audio output of approximately 3 watts can be obtained with an input of 2.1 volts. Combined noise and distortion, at full rated output, is less than 10%. The amplifier has an input impedance of 500 ohms, and is intended for bridging across the 500-ohm audio line of the aircraft. The MI-51B operates from the 27.5-volt d-c primary source and draws only 200 ma at full output.

*Cycolac is a high-impact thermoplastic styrene resin. Trademark Marbon Chemical Company, Gary, Indiana.

The audio input signal is fed to the modified push-pull transistor amplifier (figure 1) in phase opposition by the two secondary windings of the audio transformer. Each transistor of the amplifier supplies audio power to the speaker on alternate half cycles. D-c voltage is applied to the two transistors in series. The low impedance of the transistor collector circuits permits the use of the speaker voice coil directly in the output circuit. This eliminates the usual audio output transformer. The two 60-mf capacitors are used as d-c blocking capacitors and as a-c signal path components for the audio output signal.

OPERATION

The desired volume is set up by adjusting the screwdriver VOLUME control. The desired muting is set up by adjusting the screwdriver MUTING control with the muting relay energized. A full range of attenuation of the input is provided by either control.

INSTALLATION

By referring to figure 2, Outline and Mounting Dimensions, the position and size of the four holes for installing the mounting plate is determined.

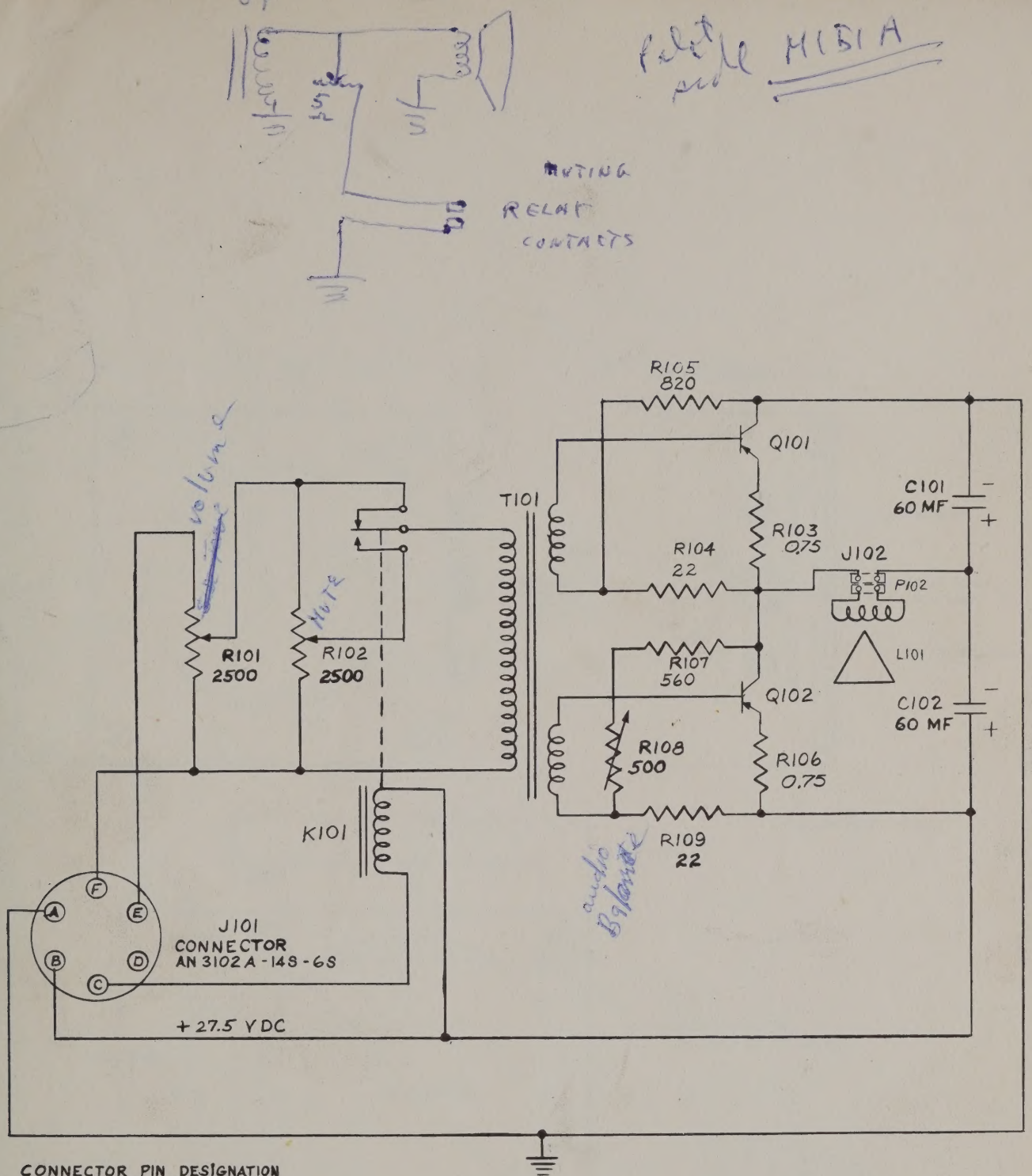
PARTS LIST

TABLE OF REPLACEABLE PARTS

<u>Symbol No.</u>	<u>Description</u>	<u>Bendix Part No.</u>
C101	Tantalytic Capacitor, 60 uf, 50 VDC	L2088097-21
C102	Tantalytic Capacitor, 60 uf, 50 VDC	L2088097-21
J101	Connector, female, 6 contacts	AN3102A-14S-6S
J102	Connector, female, 2 contacts	C2088092-1
K101	Muting Relay, 27.5 volt, spdt	L2088024-5
L101	Loudspeaker, 5" round, 12-ohm impedance	L2088091-1
P102	Connector, male, 2 contacts	C2088093-1

TABLE OF REPLACEABLE PARTS (Continued)

<u>Symbol No.</u>	<u>Description</u>	<u>Bendix Part No.</u>
R101	Potentiometer, 2500 ohms $\pm 20\%$, A taper	OA109267-57
R102	Potentiometer, 2500 ohms $\pm 20\%$, A taper	OA109267-57
R103	Resistor, 0.75 ohm $\pm 5\%$, 1/2w, wirewound	L2088067-2
R104	Resistor, 22 ohms $\pm 10\%$, 1/2w, comp	RC20GF220K
R105	Resistor, 820 ohms $\pm 10\%$, 1/2w, comp	RC20GF821K
R106	Resistor, 0.75 ohm $\pm 5\%$, 1/2w, wirewound	L2088067-2
R107	Resistor, 560 ohms $\pm 10\%$, 1/2w, comp	RC20GF561K
R108	Potentiometer, 500 ohms $\pm 20\%$, U taper	OA109267-1
R109	Resistor, 22 ohms $\pm 10\%$, 1/2w, comp	RC20GF220K
T101	Transformer, pri. 500 ohms - sec. 2 secondary windings 100 ohms each	L285317-1
X101	Transistor base, 2 contacts	L2088114-1
X102	Transistor base, 2 contacts	L2088114-1
Q101	Transistor, Bendix Red Bank 2N235A (To be supplied with insulating plate and washers)	L2088090-1
Q102	Transistor, Bendix Red Bank 2N235A (To be supplied with insulating plate and washers)	L2088090-1



CONNECTOR PIN DESIGNATION

PIN	FUNCTION
A	GND
B	+27.5
C	MUTING RELAY GND
D	NO CONNECTION
E	AUDIO - HI SIDE
F	AUDIO - LO SIDE

✓ A — GND
 ✓ B — 27.5V RELAY ONLY
 ✓ C — RELAY MUTING-
 D — 115V AC HOT
 E — AUDIO HI SIDE
 F — AUDIO LOW GND

Figure 1. Schematic Diagram

relay uses only one pole on/off
 muting pot is 5Ω not 2500Ω is in
 voice coil chrt

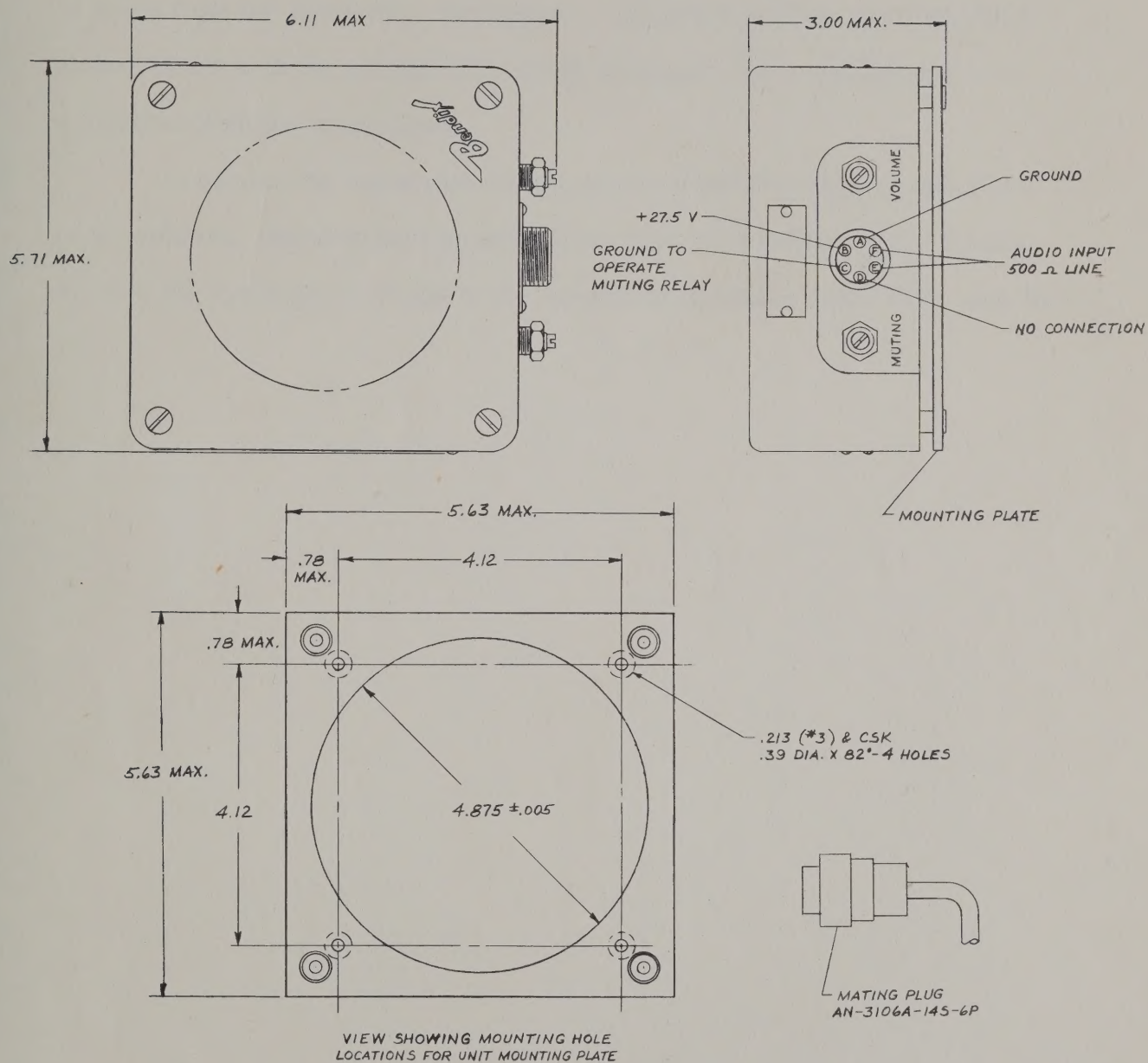


Figure 2. Outline and Mounting Dimensions

ADJUSTMENTS

Adjust the screwdriver VOLUME control (R101) for a comfortable level of sound from the receiver or interphone. Adjust the screwdriver MUTING control (R102) with the muting relay (K101) energized, for a comfortable level of sidetone from the transmitter.

To balance the transistor circuit after a transistor (Q101 or Q102) has been replaced, adjust balance potentiometer R108 for a voltage of 13.75 volts dc (half the d-c supply voltage) at the junction of resistors R103, R104, and R107.

